Progression of Computing in St Pius X
2020-2021

Updated: April 2020

Curriculum Intent of Computing in St Pius X

At St Pius X we want our pupils to be MASTERS of technology and not slaves to it. Technology is everywhere and will play a pivotal part in our students' lives . Therefore, we want to model and educate our pupils on how to use technology positively, responsibly and safely. We want our pupils to be creators not consumers of technology and for them to understand that there is always a choice with using technology and therefore, as a school, take every opportunity to utilise technology to model positive use. We recognise that the best prevention for many issues we currently see with technology/social media is through education.

Our thematic approach to the curriculum has to be balanced with the opportunity for pupils to apply their knowledge creatively, which will in turn, help our pupils become skilful computer scientists. We encourage staff to try to embed computing across the whole curriculum to make learning creative and accessible. We want our pupils to be fluent with a range of tools to best express their understanding and hope by Upper Key Stage 2, children have the independence and confidence to choose the best tool to fulfil the task and challenge set by teachers. In addition, we understand that effective use of technology can open accessibility opportunities for our pupils – especially for our SEND children – and is why our KS2 children all have access to one-to-one iPads.

Big Ideas in Computing

 Investigation	Understanding the importance of investigation and how this has led to significant change in the world.
Processes 	Understanding the many dynamic and physical processes that shape the world.
 Creativity	Understanding the creative process and how everyday and exceptional creativity can shape the world
Comparison 	Understanding how and why things are the same or different.
 Materials	Understanding the properties of all matter, living and non-living.
Nature 	Understanding the complexities of the plant and animal species that inhabit the world.
 Human Kind	Understanding what it means to be human and how human behaviour has shaped the world.
Place	Understanding the visual, cultural, social, and environmental aspects of places around the world.

Big Idea – **Investigation**

	Year Group	Learning Intention	Knowledge	Coverage
Data and Computational Thinking	Year 1	Follow a sequence of steps to solve a problem and create instructions that others can follow (for floor robots or onscreen sprites).	An algorithm is a sequence of steps, instructions or rules that is used to perform a specific task. Algorithms can be followed by people or digital equipment. For algorithms to achieve the end goal, instructions have to be accurate and followed sequentially.	Moon Zoom
	Year 2	Create a simple solution that tests an idea, predict the outcome and test and debug the solution to ensure that it works.	Computers' behaviour can be predicted and the outcome tested by following the steps of an algorithm and recognising that the computer will follow instructions precisely.	Street Detectives Wriggle and Crawl
	Year 3	Identify and use repetitions or loops in a program sequence, predicting outcomes and noticing and correcting any mistakes.	Repetitions or loops can be used in programming where a computer will continue to run part of a program a number of times or until a condition is met, using the term 'repeat... until'. The given feedback can be used to identify and correct any mistakes in the program.	Urban Pioneers
	Year 4	Describe and demonstrate a simple program that contains a looping element and how part of a program may need repetition.	A loop is a sequence of instructions that repeats continually until a certain condition is met. A program that contains a looping element is useful for a wide range of scenarios, such as controlling traffic lights.	Discrete
	Year 5	Design, write and debug simple sequences of instructions (algorithms), including IF, THEN and OTHERWISE commands, to decide if something is true or false.	Sequences of instructions (algorithms) that contain IF, THEN and OTHERWISE statements are called selections. The computer will complete operations based on whether the conditions of these selections are met or not.	Stargazers Scream Machine Alchemy Island
	Year 6	Demonstrate how programs run in an exact order by following a sequence of instructions, and test and debug programs.	Decomposition is breaking down a problem down into smaller parts to make it easier to process and following a sequence of instructions. Decomposition is useful for checking programs and debugging because it saves time.	Discrete
Networks				
	Year 1	Show awareness that work they create and save on a computer or tablet can be shown to others using another device.	When work is saved electronically, it can be stored on a hard drive, a shared drive called a server or online so that it can be opened on the same device or another device at a later time.	Bright Lights, Big City
	Year 2			
	Year 3	Recognise that saved work can be retrieved from another device on the same network.	When work is saved, it is stored on a storage device, such as the computer's hard drive, a USB flash drive, a shared server or online. This work can then be retrieved from another device (except if it is saved on the computer's hard drive).	Tribal Tales
	Year 4	Recognise that the school network links computers to allow the sharing of resources.	A school network has computers that are connected together so they can share hardware, software and data.	Road Trip USA!
	Year 6	Name some of the positives and negatives of communicating with others online.	The positives of communicating online include the speed, low cost and ability to communicate globally. The negatives of communicating online include the threat to privacy, influencing of others, access to technology and anonymity.	Darwin's Delight A Child's War

Big Idea – **Processes**

	Year Group	Learning Intention	Knowledge	Coverage
Physical Interactions	Year 1	Observe and explore outcomes when buttons are pressed in sequences on a robot and identify and debug a simple algorithm.	An algorithm is a sequence of steps, instructions or rules that is used to perform a specific task. Algorithms can be followed by people or digital equipment. For algorithms to achieve the end goal, instructions have to be accurate and followed sequentially. Mistakes are called bugs and finding and fixing them is called debugging.	Moon Zoom! Bright Lights, Big City
	Year 2	Plan and enter a sequence of instructions using a robot, specifying distance and angle of turn.	Robots can be programmed to follow a series of instructions using algorithms.	Street Detectives Wriggle and Crawl Beat Band Boogie
	Year 3	Design, write and enter a sequence of instructions using a robot or other device to achieve specific outcomes, debugging if necessary.	Sequencing instructions is the step-by-step process that robots or other devices follow to achieve specific outcomes. This can be a single algorithm or series of algorithms called a program.	Urban Pioneers Discrete
	Year 4	Use sensors to 'trigger' an action, such as sound or movement.	Computers interact with the world using input and output devices. An input device may include sensors that can detect changes, such as in temperature, light level, sound level or movement. The input then sends the information to a computer, which tells the output device to trigger an action, such as making a sound or creating a movement.	Discrete
	Year 6	Design, write and debug a program to control a physical system, which may include output devices, such as motors, lights and buzzers.	Input and output devices can be combined with programming software to control a physical system, such as using sensors to create a sensory station that incorporates motors, lights and buzzers.	Discrete

Big Idea – **Creativity**

	Year Group	Learning Intention	Knowledge	Coverage
Creation	Year 1	Select appropriate software to complete given tasks using text, images, audio and video clips.	Software is the programs that are used by a computer, such as word processing software, presentation software or image editing software. It can be used to create and combine digital content for different audiences and purposes.	Moon Zoom Superheroes Rio de Vida
	Year 2	Create and edit multimedia components for a range of tasks.	Multimedia components, such as text, images, audio and video clips, can be created, edited and combined to create content for a range of tasks.	Street Detectives Beat Band Boogie Towers, Tunnels and Turrets Wiggle and Crawl
	Year 3	Combine a range of text, images, animation and audio and video clips for given purposes.	Text, images, animation, audio and video clips can be combined using tools within a piece of software or by using a range of software. For example, an image could be inserted into a word processing document or a video could be inserted into a presentation.	Gods and Mortals Flow Mighty Metals
	Year 4	Manipulate a range of text, images, sound or video clips and animation for given purposes.	Manipulating a range of text, images, sound or video clips and animation may include changing their style, size, colour, effect, shape, location or format.	Burps, Bottoms and Bile Traders and Raiders Playlist Misty Mountain Sierra Road Trip USA!
	Year 5	Create, select and combine a range of texts, images, sound clips and videos for given purposes.	Creating, selecting and combining a range of texts, images, sound clips and videos for given purposes could include creating a web page, slide show presentation, short film or an animation.	Time Traveller Scream Machine Discrete
	Year 6	Select, use and combine a variety of software, including internet services, to meet a goal.	A variety of software, such as word processing software, image editing software or internet services, can be selected, used and combined to meet a goal.	Darwin's Delights Revolution Tomorrow's World Hola Mexico! A Child's War

Big Idea – **Comparison**

	Year Group	Learning Intention	Knowledge	Coverage
Digital Searching	Year 1	Search for or retrieve digital content, including images and information, in digital folders and online, with supervision.	To search for digital content, the user needs to know the file name, file type and folder name or keywords and search terms to find the correct information.	Bright Lights, Big City
	Year 2			
	Year 3	Explain that the World Wide Web contains lots of web pages about different subjects that can be searched.	The World Wide Web is a collection of web pages that are run via the internet. The information requested can be displayed as text, images or videos.	Flow Discrete
	Year 4	Explain that when searching online, some web pages may contain adverts or pop-ups that encourage people to click on them.	Pop-ups or adverts are a form of online advertising that companies use to encourage users to buy something or go to another website. Some pop-ups can be malicious and lead to a virus, whereas some are helpful and give information. Pop-ups can be blocked by computer software. Concerns should be reported to a trusted adult before clicking on anything.	Discrete
	Year 5	Discern where web content might originate from and recognise that this gives clues to its authenticity, reliability and security.	Some websites have more reliable content than others and content should be verified with another independent source.	Scream Machine
	Year 6	Critically evaluate search engine results and identify factors that may affect ranking, such as how long the site has existed, the number of links to the site and whether the organisation has paid to have their site promoted.	Search engines take many factors into account, such as the quality of the site, number of updates or number of matches to keywords. However, search engines do not consider whether the content is true, age-appropriate or relevant, and so users need to be aware of these things when searching.	Darwin's Delight Tomorrow's World

Big Idea – **Materials**

	Year Group	Learning Intention	Knowledge	Coverage
Hardware	Year 1	Use a range of computing hardware for different purposes.	Hardware is the parts of a computer that you can touch, such as a mouse, tablet or floor robot.	Moon Zoom! Superheroes Bright Lights, Big City
	Year 2	Use computing hardware in different ways to collect data.	Hardware, such as cameras, scanners and data loggers, can be used to collect data.	Street Detectives Towers, Tunnels and Turrets Bounce
	Year 3	Use familiar computer hardware to successfully complete a task.	Several pieces of hardware can be used together to complete one task, such as using a camera to take a photograph, uploading it to a computer and then printing it using a printer.	Tribal Tales
	Year 4			
	Year 5	Apply computing skills using unfamiliar hardware to solve a problem successfully.	Using prior knowledge and experience of computing skills can be applied to unfamiliar hardware to solve a problem successfully.	Star Gazers Alchemy Island Discrete
	Year 6	Identify how using different hardware can increase creativity and productivity.	Some hardware is more effective than others in particular contexts, such as using virtual reality or a touchscreen rather than a mouse to meet a specific need. Choosing the right hardware can increase creativity and productivity.	Darwin's Delights
Software	Year 1	Begin to use a range of software for different purposes.	Software is the programs that are used by a computer, such as word processing software, presentation software or image editing software.	Moon Zoom Superheroes Bright Lights, Big City Rio de Vida
	Year 2	Use different types of software and identify their purposes.	Each type of software, such as word processing, presentation and image editing, can be used for different purposes, including writing reports and creating slide shows or posters.	Towers, Tunnels and Turrets
	Year 3	Use a range of different software to successfully complete a project.	Several pieces of software can be used together to complete one task, such as adding a video to a word processed document.	Rocks, Relics and Rumbles Mighty metals
	Year 4	Apply computing skills to use new computing software.	New computing software commonly has features that should be familiar to users, such as icons or terminology.	Misty Mountain Sierra Vista Road Trips USA Discrete
	Year 5	Apply computing skills to create content using unfamiliar programs or apps.	Using prior knowledge and experience of computing skills can be applied to create content using unfamiliar programs or apps.	Time Traveller Star Gazing Alchemy Island

Big Idea – **Nature**

	Year Group	Learning Intention	Knowledge	Coverage
Real World	Year 1	Observe how collected data can be represented electronically.	Data can be collected manually or using digital technology, such as data loggers. It can be represented in different electronic forms, including charts and tables.	Superheroes
	Year 2	Use data handling skills to represent data digitally.	Software is available that can be used to represent collected data digitally, such as in a pictogram or bar chart.	Discrete
	Year 4	Log light level, temperature or sound level using a program or app, over a period of time.	An input device receives information about the outside world, such as light level, temperature or sound level, and sends it to a computer. This information can be tracked over time using a program or app.	Discreet
	Year 5	Use sensing tools or apps for an investigation and interpret the findings.	Sensing tools or apps have features that can be used for an investigation and the findings can be interpreted. For example, a sound sensor or app can be used to investigate the pitch of instruments.	Time Traveller

Big Idea – **Human Kind**

	Year Group	Learning Intention	Knowledge	Coverage
Communication	Year 1	Explain simply that digital technology can be used to connect with others locally and globally.	Digital technology is used in all parts of everyday life, such as using a tablet to play a game or a microwave to heat food. Some of this digital technology can be used to connect with others locally, such as sharing digital work in the classroom, or globally, such as using Skype on a computer to speak to a friend overseas.	Rio de Vida
	Year 2	Use digital technology appropriately to communicate and connect with others locally and globally.	Digital technology, such as email, social media platforms or blogs, can be used by individuals to communicate and connect with others but should be used appropriately, including using language that is not hurtful or disrespectful to others, having adult supervision or following the school's acceptable use policy.	Discrete
	Year 3	Explain the advantages and disadvantages of communicating electronically and strategies for preventing issues.	Advantages of communicating electronically are that it is available at any time, instant and global. Disadvantages include easier misunderstandings, lack of privacy (once something is published online, it cannot be removed) and a threat to personal safety (access to personal information). Concerns should be reported to a trusted adult.	Rocks, relics and Rumbles Discrete
	Year 4	Explain actions to report and prevent cyberbullying.	Cyberbullying is bullying using technology, such as social media or gaming networks. A trusted adult or child safety organisation should be contacted if there are any concerns or worries. A trusted adult can provide help and support or contact the police if needed.	Discreet teaching
	Year 5	Demonstrate appropriate online behaviour and apply a range of strategies to protect themselves and others from potential online dangers, inappropriate behaviour and bullying.	Working online requires a level of responsibility and strategies to stay safe, including protecting private information and accounts. This enables people to protect themselves and others from potential online dangers, inappropriate behaviour and bullying. Any concerns should be reported to a trusted adult, the police or child protection organisations.	Discreet teaching
	Year 6	Recognise that sending intimate images and content and using offensive language online is a risk and has a permanent online trail (digital footprint).	People online are not always who they say they are and may use intimate images or content inappropriately. Once something is online, it is not under the user's control and can be made public. Using offensive language can affect others negatively and is a form of bullying called 'trolling'.	Discreet teaching
Staying	Year 1	Recognise that some websites ask for private information and discuss how to handle these requests and where to go for help and support.	Private information includes names, addresses, dates of birth or schools and this information should not be shared online. Any concerns or worries should be reported to a trusted adult.	Superheroes

	Year 2	Stay safe online by choosing websites that are appropriate to visit (based on the confidence you have in the author(s) of the website) and know where to go for help and support when they have concerns about content or contact on the internet and other online technologies.	Some websites are not age-appropriate and so it is important to tell a trusted adult about any concerns or worries.	Discreet
	Year 3	Describe simple rules for sharing images and data safely.	Images and data should not be shared online without the permission of the owner. Personal information, such as full name, age, school and address, should not be shared online.	Urban Pioneers
	Year 4	Identify the positive and negative influences of technology on health and the environment and how to protect themselves.	Technology can have positive influences on health, such as enabling people to hear using a hearing aid or helping doctors to diagnose or treat illnesses using special machines. Negative influences on health include problems like eye strain and poor posture. Technology can have positive influences on the environment, such as using systems to monitor and control energy usage. Negative influences on the environment include contributing to pollution by travelling and using a lot of power.	Discrete
	Year 5	Discuss the impact that digital content can have and why it is important to discuss their use of technology with an adult.	Digital content can affect others and be available to anyone. Digital content is traceable, which means it can be tracked to the person who created it. To stay safe, it is important to discuss technology use with a trusted adult.	Scream machine
	Year 6	Identify the benefits and risks of devices broadcasting the user's location and of giving personal information to different organisations.	The benefits of devices broadcasting the user's location and passing on personal information include improved customer service, allowing organisations to analyse data and improving the quality of applications. Risks include identity theft, cyberstalking, victimisation and threat to privacy.	Discreet teaching
Digital Citizenship	Year 1	Recognise that work they have created belongs to them.	When work is saved electronically, it needs to have a name that identifies it and is easily remembered.	Moon Zoom!
	Year 2	Recognise that information put online leaves a digital footprint.	A digital footprint is the information that exists on the internet, following a user's online activity.	Discreet
	Year 3	Compose clear and appropriate messages in online communities.	Online communication should be done respectfully and responsibly, considering the impact on others.	Flow
	Year 4			
	Year 5	Cite all sources when researching and explain why sources should be provided.	Citing sources is giving credit to the person or website that created the information. Using someone else's work without citing it is called plagiarism and is a form of cheating.	Discreet teaching
	Year 6	Recognise that digital content can be edited online.	Digital content may have been edited online by anyone, and so it is important to verify content against other independent or reputable sources.	Discreet teaching

Big Idea – **Place**

	Year Group	Learning Intention	Knowledge	Coverage
Digital World	Year 1	Understand that there are online tools that can help people to create content and communicate.	Software available online, such as email, social media platforms or blogs, can be made by individuals to communicate their ideas.	Moon Zoom The Enchanted Woodland
	Year 2	Recognise some uses of the internet, in simple terms.	The internet is used to connect computers or devices around the world.	Discrete
	Year 3	Use appropriate tools (software, websites and apps) to collaborate and communicate safely online.	Different software, websites and apps can be used to collaborate and communicate online. Each one has different terms and conditions that need to be followed to stay safe, such as age restrictions.	Rocks, Relics and Rumbles Flow Urban Pioneers
	Year 4	Exchange online communications with other learners, adding and responding to comments, such as in a blog.	There are various forms of online communication, such as email, blogging, vlogging and video chatting. Online communication should be used responsibly, remembering that online actions affect other people and there are rules that need to be followed.	Discrete
	Year 5	Create an online collaborative project for a specific purpose, sharing documents and appropriately setting permissions for other group members.	Online collaborative projects can be shared with different permission settings, such as who can view, edit or comment on the documents. Privacy settings can be restricted to those who are invited, those who have access to the link or can be made open to the public.	Scream Machine
	Year 6	Exchange online communications, making use of a growing range of available features and being aware of security settings.	There are a wide variety of online communication platforms, such as social media, blogs, vlogs, email or messaging, which have different available features, including the option to comment. It is important to be aware of security settings, such as age restrictions or property rights.	Tomorrow's World
Real World	Year 1	Recognise the ways digital technology can be used in the classroom, home and community.	Technology is used in many ways to do different jobs, such as using an interactive whiteboard in the classroom, using a tablet to do online shopping at home or using scanners in a shop in the community.	The Enchanted Woodland Bright Lights Big City
	Year 2	Recognise why digital technology is used in the classroom, home and community.	Digital technology is used in everyday life and can be used to support learning and connect with others.	Wriggle and cRAWL
	Year 3	Use digital technology in different ways in the classroom, home and community.	Digital technology can be used for a range of purposes in different settings, such as using a tablet in the classroom to access educational material, in the home to access entertainment and in the community to share local news.	Gods and Mortals Flow Urban Pioneers Mighty Metals Ammonite
	Year 4	Use digital technology in different ways in the classroom, home and community to achieve a set goal.	Digital technology can be used in different ways and settings to achieve a specific goal, such as using data collection in the community and home to answer a classroom based question.	Playlist Misty Mountain Sierra Road Trip USA
	Year 5	Select, use and combine appropriate technology to create a solution that will have an impact on others.	A range of technologies can be selected, used and combined, such as using different hardware and software to create a solution that will have an impact on others.	Scream Machine Pharroahs Alchemy Island
	Year 6	Combine a range of technology to achieve a particular outcome.	A range of technologies can be combined to achieve a particular outcome. For example, sensors (input), a computing device (hardware) and lights (hardware) can be used together to create a set of traffic lights.	Revolution Tomorrow's World Hola Mexico! A Child's War